



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

August 20–23, 2018
Grand Junction, Colorado

2018 Long-Term Stewardship Conference

Progress of Groundwater Remediation at the UMTRCA Disposal Site Near Shiprock, New Mexico

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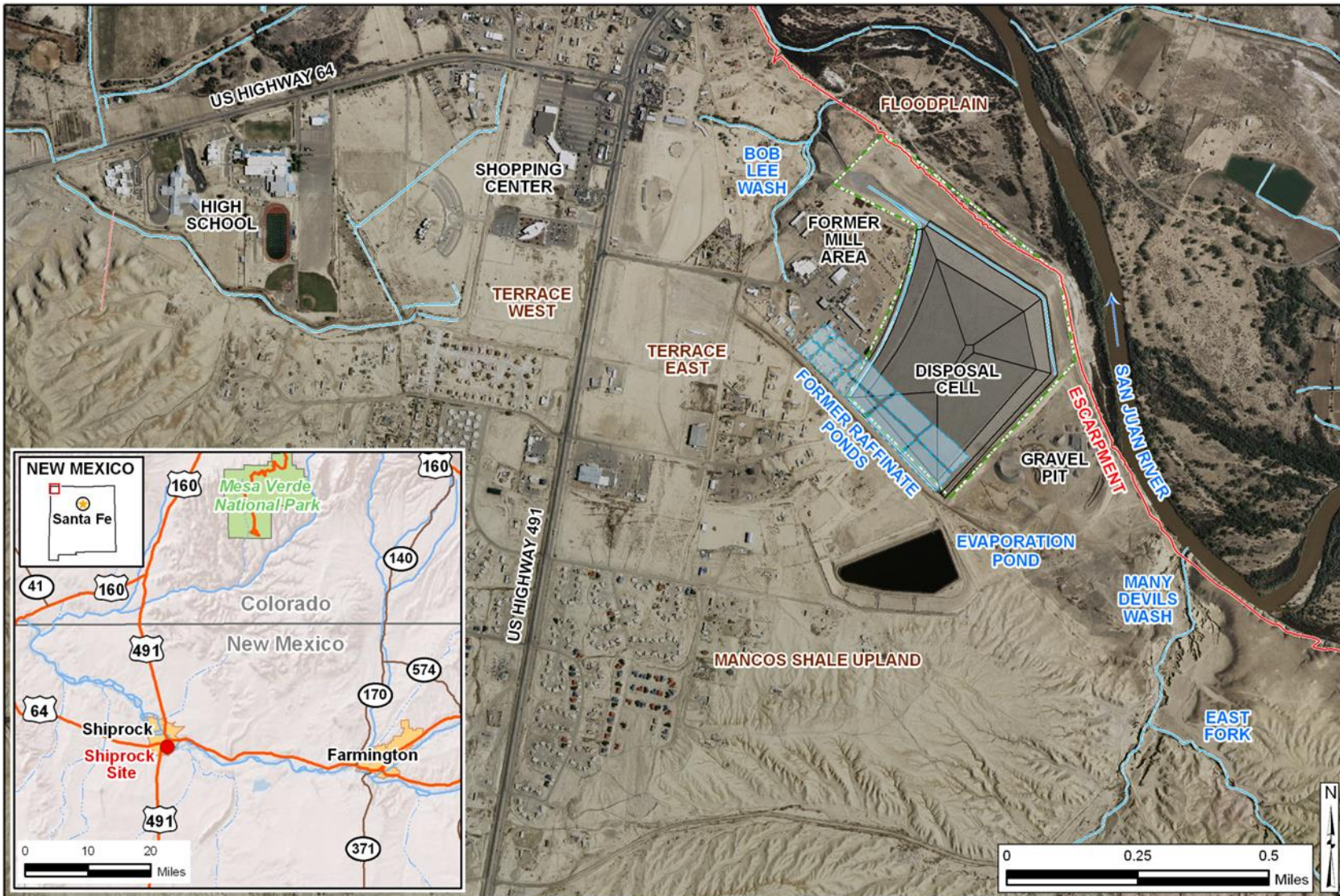
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Regional Location and Aerial View

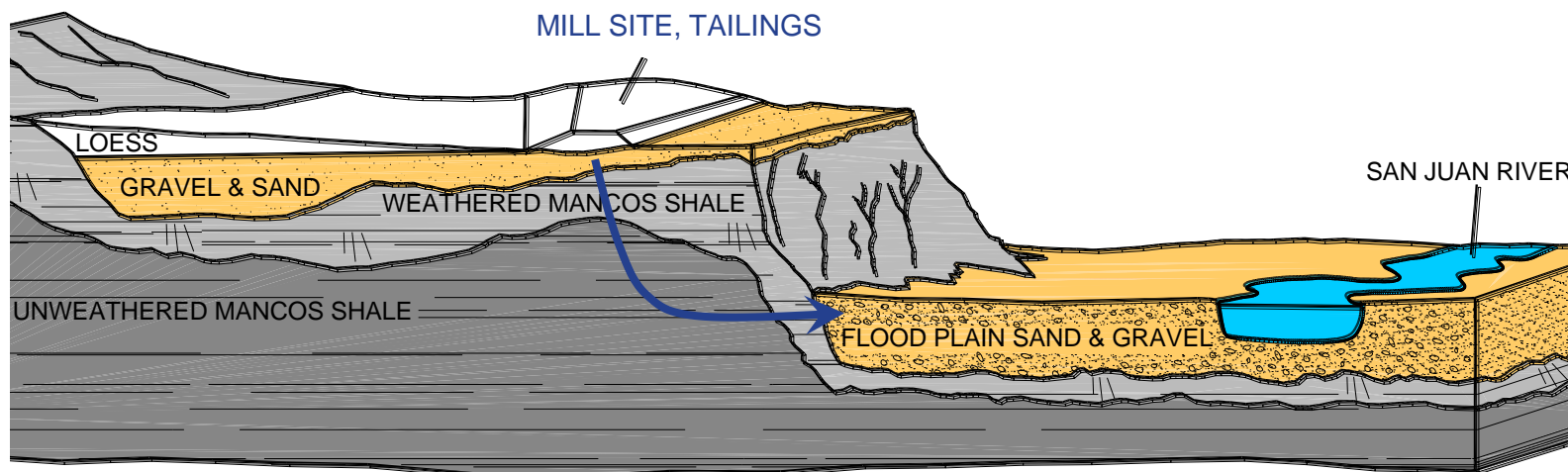


Shiprock Site in 1965 (View East-Southeast)



Historical Contaminant Sources

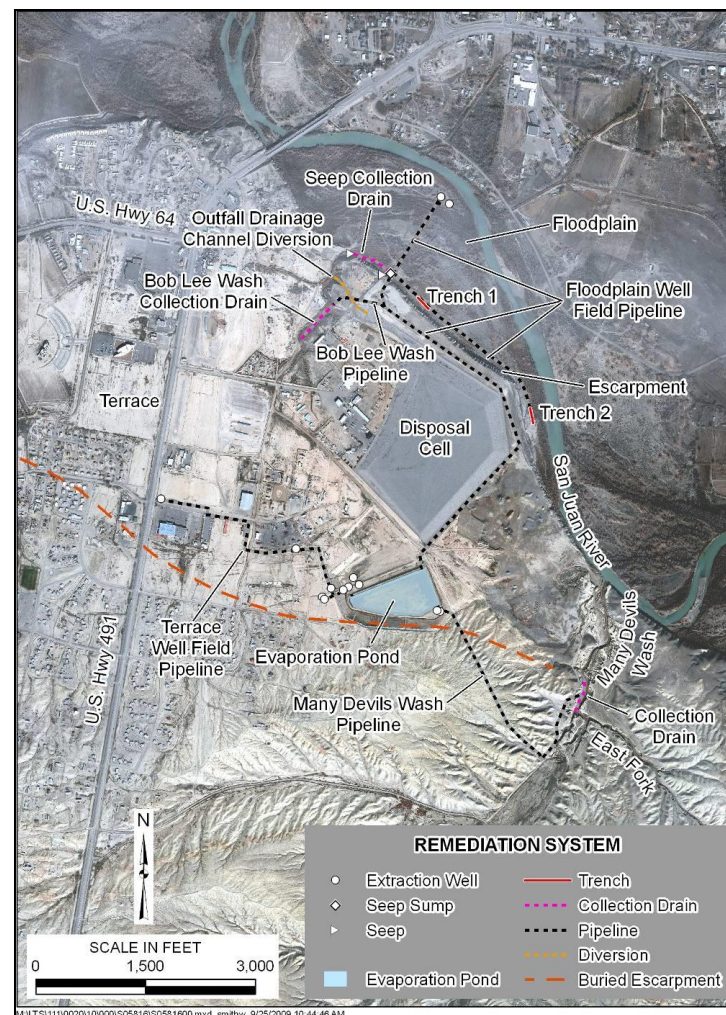
- Primary sources
 - Raffinate and tailings seepage
 - Contaminated bedrock discharge across the escarpment
 - Constituents included uranium, sulfate, and nitrate
- Additional historic sources
 - Mill-effluent pond on the floodplain
 - Windblown tailings



Schematic SW-NE geologic cross section

Groundwater Compliance Strategy

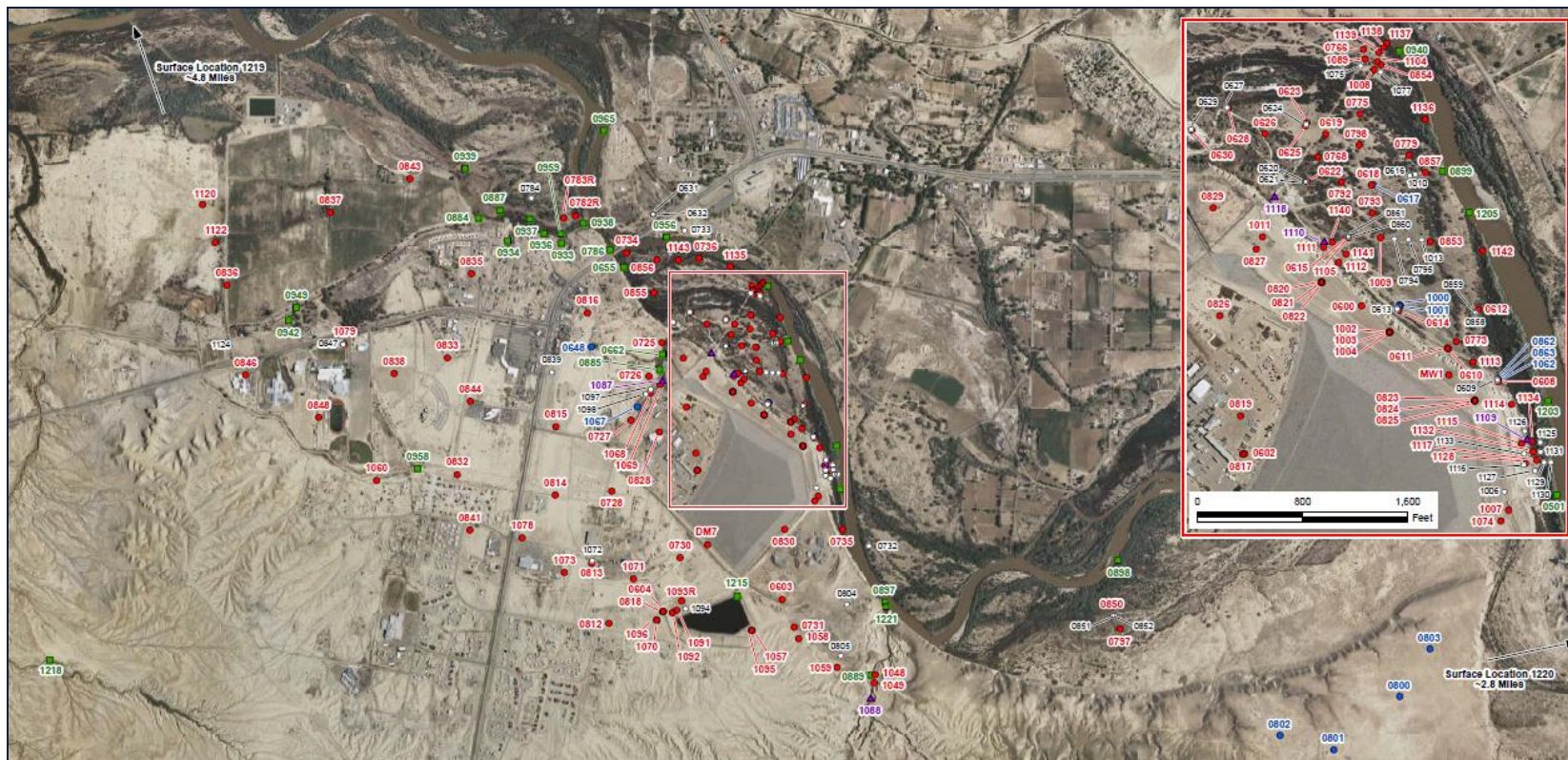
- Active remediation on the terrace
- Enhanced natural flushing in the floodplain alluvial aquifer
- Groundwater from the floodplain and terrace piped to an evaporation pond on terrace south of the disposal cell



Features of Active Remediation System,
Shiprock, NM, Disposal Site

Groundwater and Surface Water Monitoring

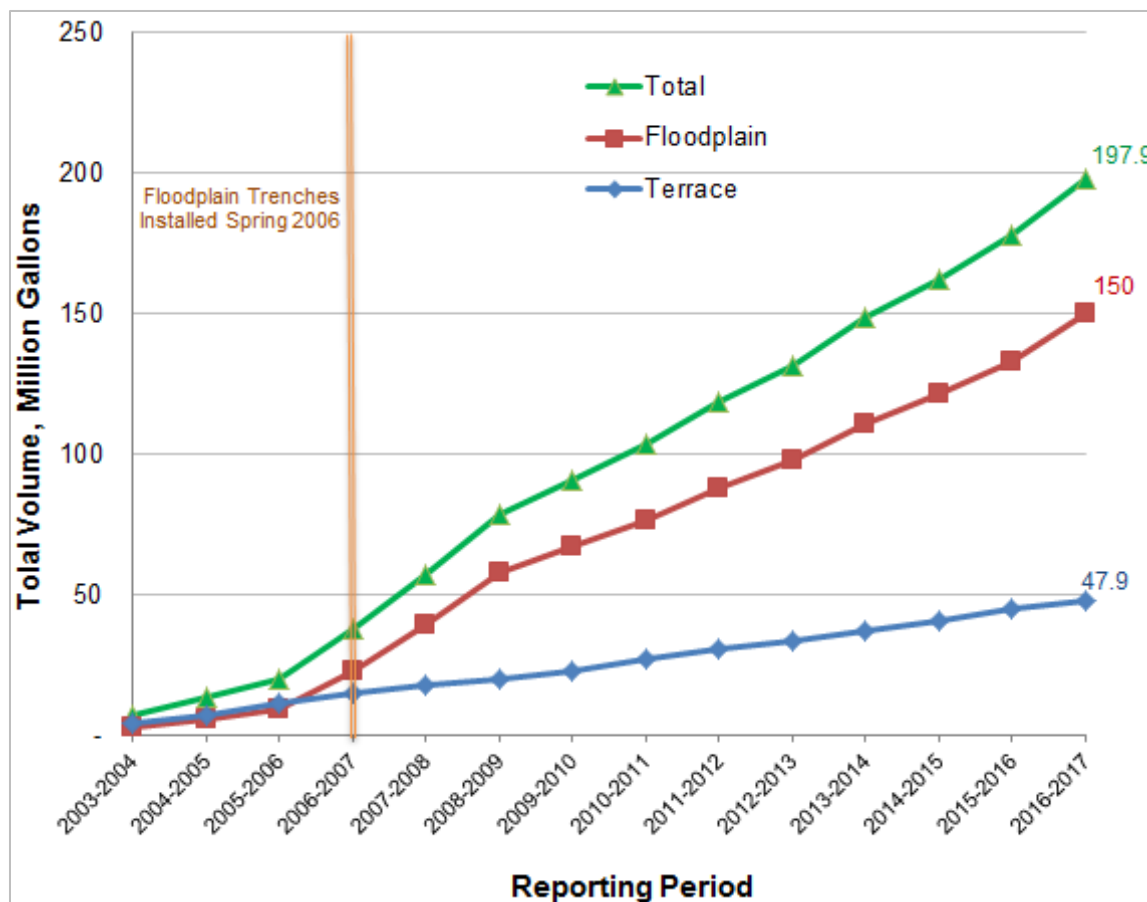
- DOE samples approximately 115 groundwater wells and 15 surface locations in fall and spring of each year



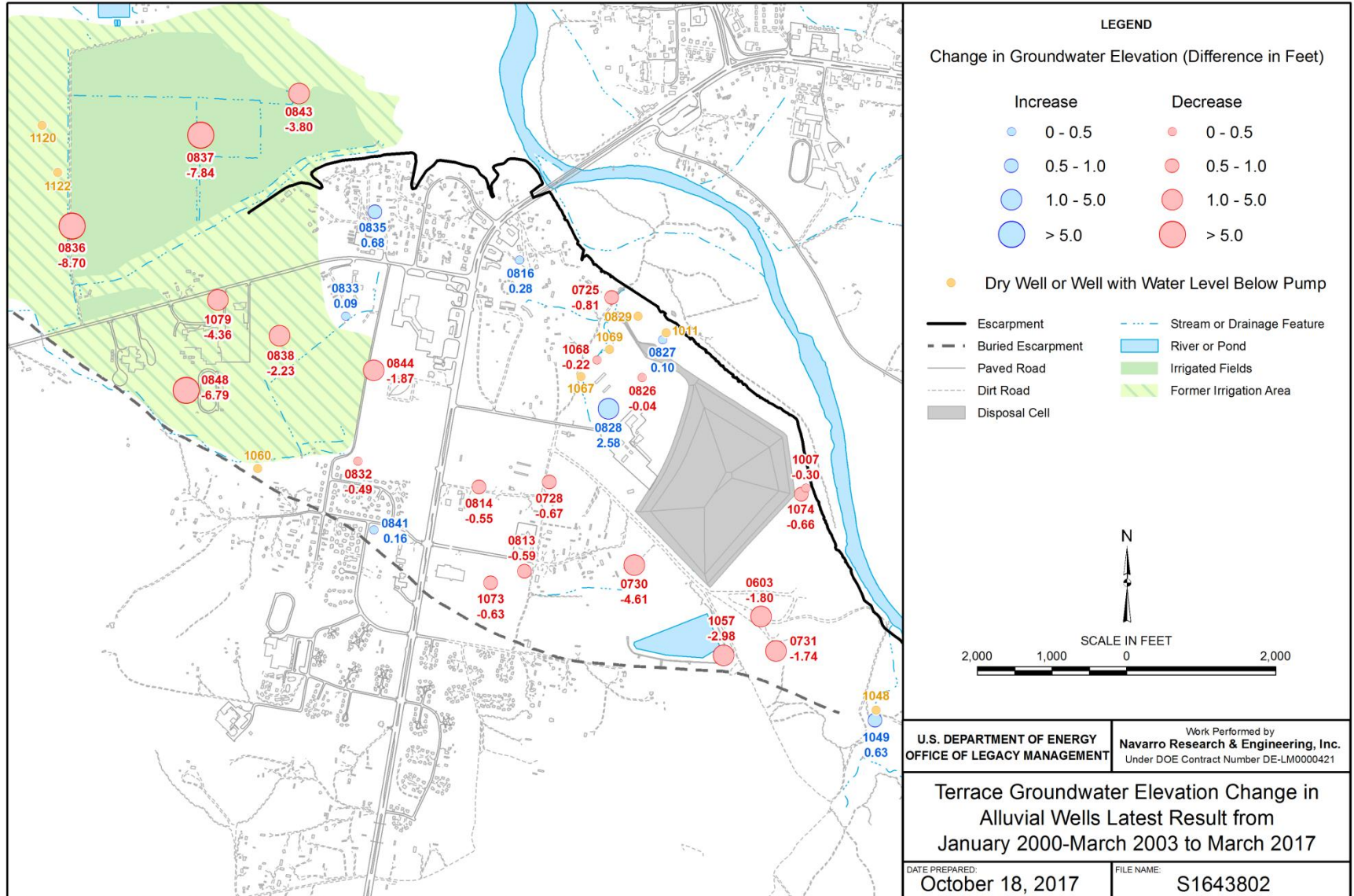
Monitoring well network, Shiprock, NM, Disposal Site

Status of Remediation

- Since 2003, approximately 150 million gallons have been removed from the floodplain alluvial aquifer and 48 millions gallons from the terrace alluvial aquifer

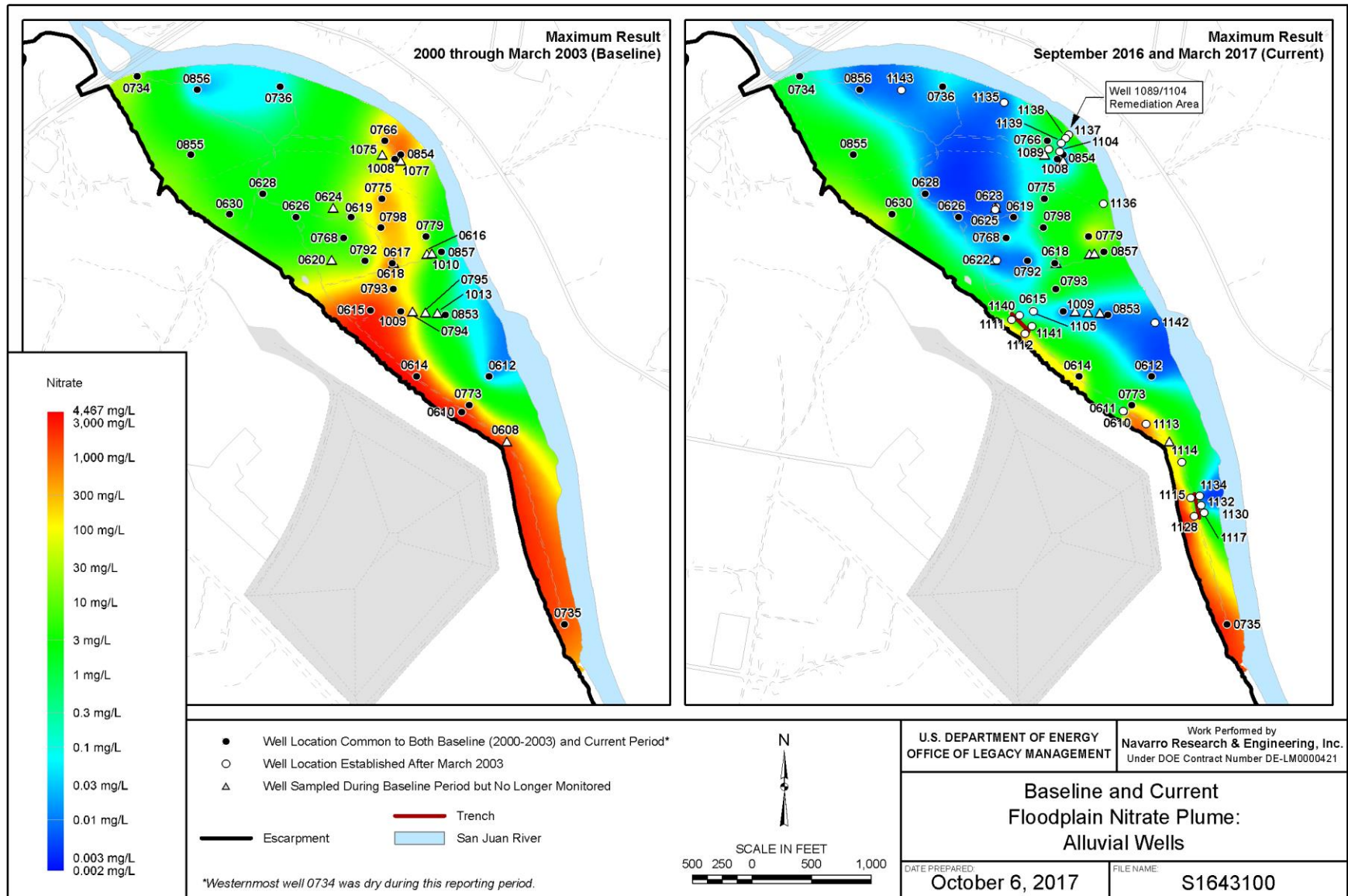


Groundwater Elevation Change



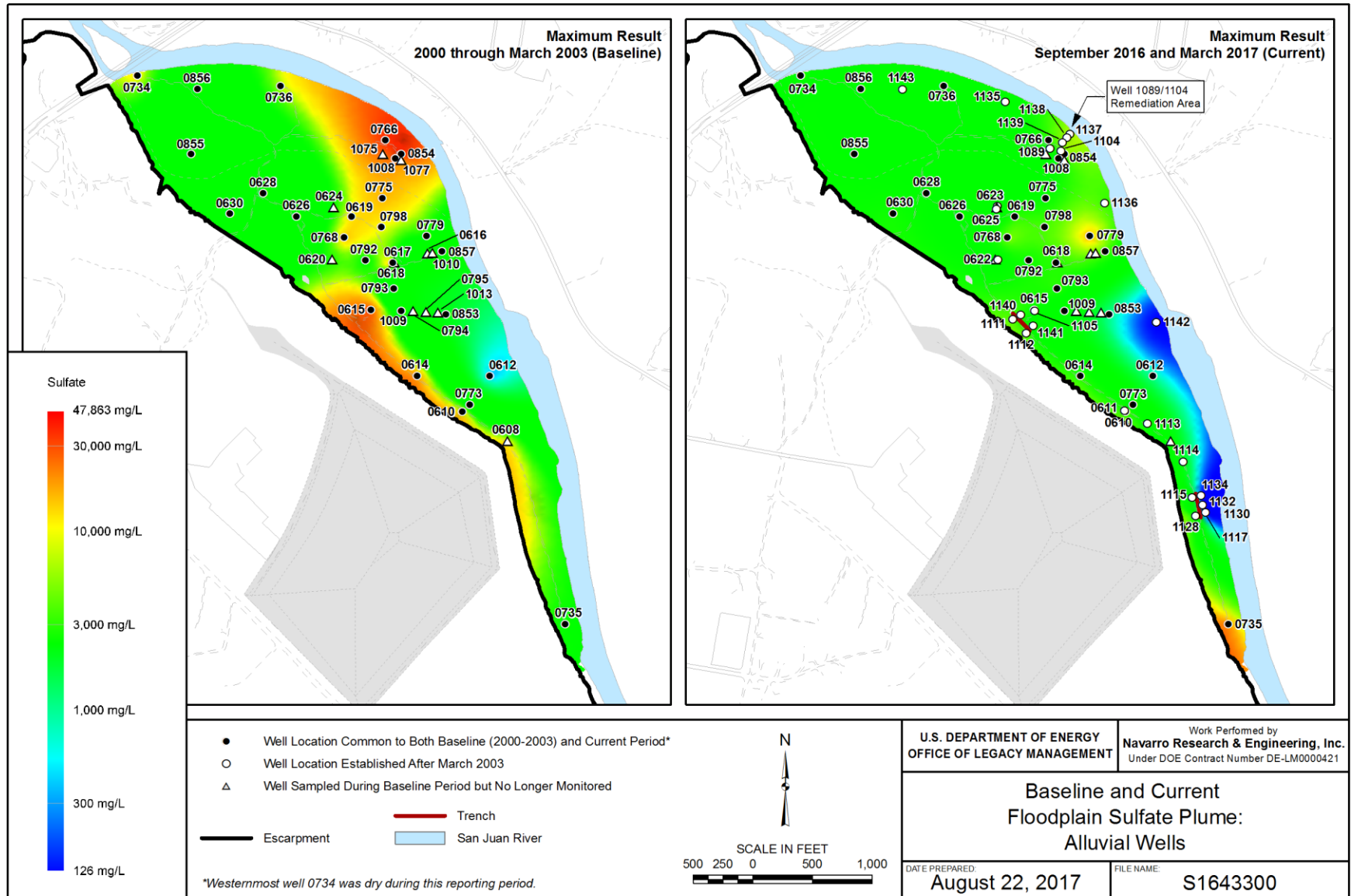
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Nitrate Plume: Baseline and Current Conditions



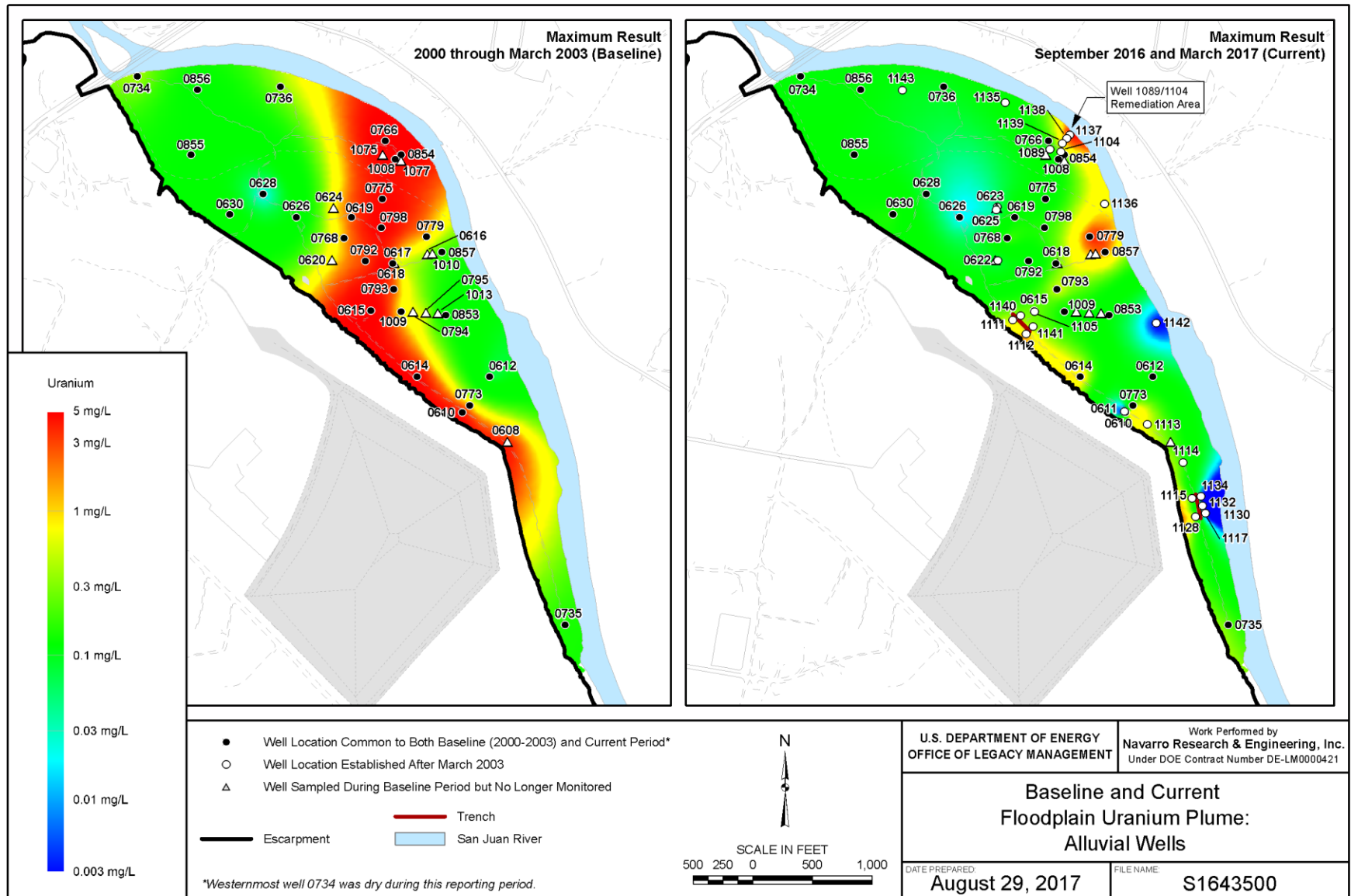
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Sulfate Plume: Baseline and Current Conditions



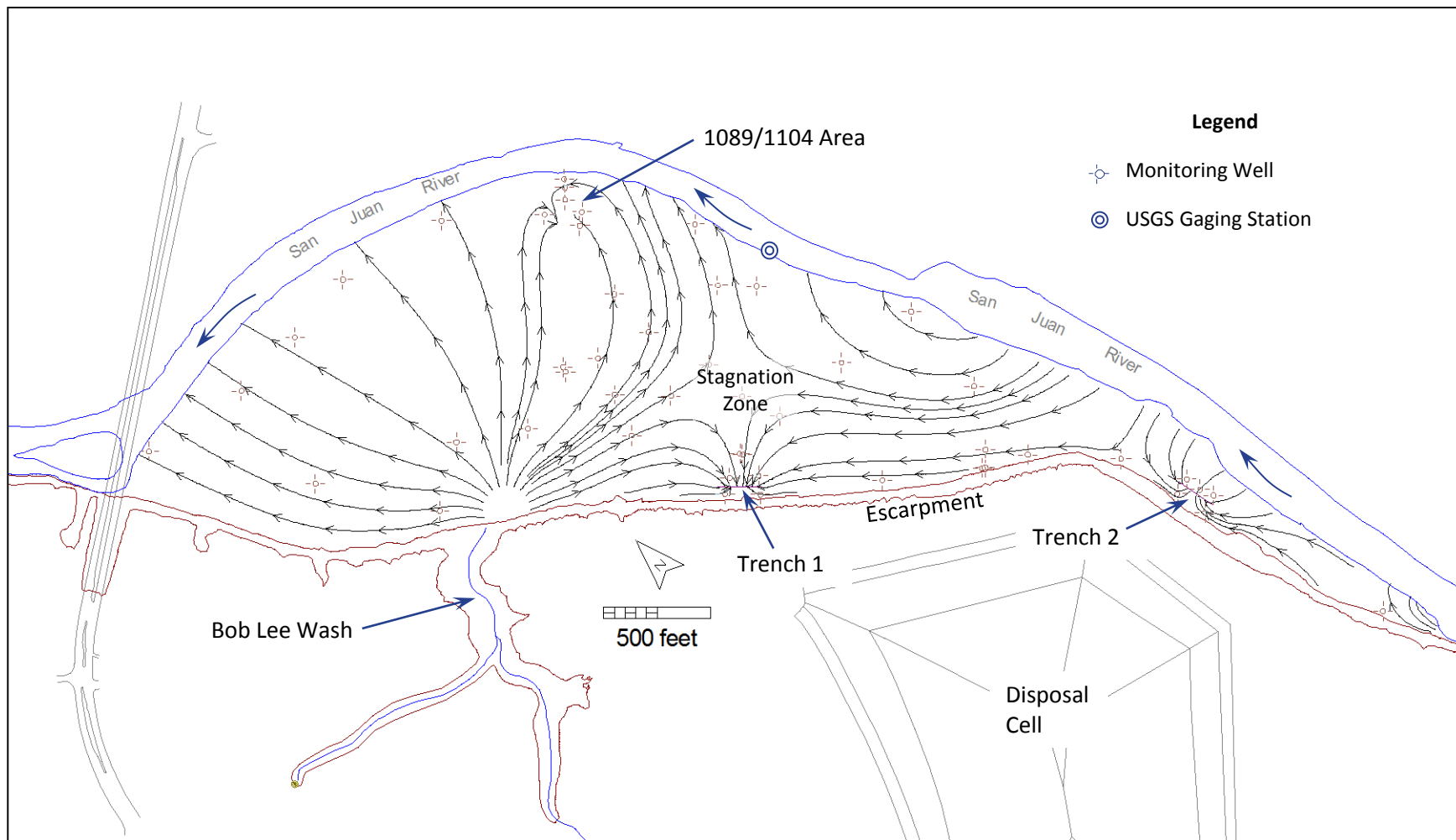
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Uranium Plume: Baseline and Current Conditions



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Flow Paths Induced by Remediation Pumping



Model simulation of streamlines in alluvial groundwater system, Shiprock, NM, Disposal Site

Summary

- Groundwater removal since 2003
 - Approximately 96% of initial volume of groundwater has been removed from the terrace
 - With the exception of Bob Lee Wash all seeps have been dry since 2008
 - Terrace wells produce less than 1 gallon per minute
- Chemical-mass removal since 2003
 - Nitrate – 296,818 pounds
 - Sulfate - 3,889,482 pounds
 - Uranium – 823 pounds



Evaporation pond, 2017

Information

- LM website: <https://energy.gov/lm>
- Shiprock webpage: <https://www.lm.doe.gov/Shiprock/Sites.aspx>
 - Site fact sheet
 - Long-Term Surveillance and Maintenance Plan
 - Site surveillance and maintenance records
 - Geospatial environmental mapping system
 - Inspection and sampling schedule

The screenshot displays the ENERGY.GOV Office of Legacy Management website. The header is green with the site name and a search bar. Navigation tabs include Services, Sites, Mission, News, and About Us. The left sidebar contains links for LM Sites, Mapping and Monitoring (GEMS), and a list of site categories. The main content area is titled 'Shiprock, New Mexico, Disposal Site' and includes a map of New Mexico with a star at Santa Fe, a photograph of the site, and a detailed text description of the site's history and management. A list of links for documents, contact information, and schedules is provided at the bottom.

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LM Home > LM Sites > New Mexico

Shiprock, New Mexico, Disposal Site
UMTRCA Title I site

• Shiprock Disposal Site

Santa Fe

New Mexico

The Shiprock Disposal Site, an Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I disposal site, is licensed to DOE for long-term custody and managed by the Office of Legacy Management. The site transferred to the Office of Legacy Management in 2003 and requires routine inspection and maintenance, records-related activities, and stakeholder support. For more information about the Shiprock site, view the [fact sheet](#).

- [Site Documents and Links](#)
- [Contact Us](#)
- [Shiprock Public Meeting, August 17, 2011](#)
- [Environmental Sciences Laboratory](#)
- [Inspection/Sampling Schedule](#)
- [Shiprock Disposal Site Mapping and Monitoring \(GEMS\)](#)

Questions and Discussion

